REMARKS

Claims 1-16 and 18-58 are present in this application. Claims 16, 23, 24, 25 and 57 have been amended. Claim 58 has been added in order to reinstate subject matter of original claim 17. Appropriate dependencies have been corrected. Claims 1-15 and 39-57 have been withdrawn. Claim 16 is independent.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 22, 28, and 37 are allowable.

Claim Rejections - Spitzer

According to the Office Action, claims 16, 18-21, 23, 27, 29-34 have been rejected under 35 U.S.C. § 102(b) as being anticipated by WO/93/15589 ("Spitzer"). Claims 35 and 36 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Spitzer in view of U.S. Patent 5,663,099 (Okabe). Applicants believe that the statements of rejection presented in the final Office Action appear to be incorrect. Applicants respectfully traverse these rejections.

Because the amendment to incorporate the subject matter of claim 17 into claim 16 appears to have complicated the issues, Applicants have amended claim 16 to remove the subject matter that had been added, and reinstated claim 17 as new claim 58. The following remarks reflect claim 16 as amended.

Spitzer's devices formed as thin film poly-Si, a-Si or x-Si formed using a process of ISE or CLEFT do not constitute non-single crystal thin film devices

Embodiments of claim 16 are directed to a semiconductor device including, among other things, "a non-single-crystal silicon thin-film device manufactured from a non-single-crystal silicon thin film and a single-crystal silicon thin-film device manufactured from a single-crystal silicon thin film, wherein the non-single-crystal silicon thin-film device and the single-crystal silicon thin-film device are provided in different areas of one insulating substrate."

Applicants submit that Spitzer's international publication entitled, "SINGLE CRYSTAL SILICON ARRAYED DEVICES," does not anticipate the invention of claim 16. In particular, the Applicants submit that the Examiner's rejections are clearly in error because the single prior art reference to Spitzer fails to teach or suggest the claimed semiconductor device including at least the limitation of "wherein the non-single-crystal silicon thin-film device and the single-crystal silicon thin-film device are provided in different areas of one insulating substrate."

Legal Requirements for Anticipation

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. Dismissed, 468 U.S. 1228 (1984); W.L. Gore and Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. Denied, 469 U.S. 851 (1984).

The Office Action indicates that Figure 25A and description on page 52, lines 1-30 of Spitzer teaches the elements of claim 16 (Office Action at pages 2-3). In addition, the Final Office Action dated June 27, 2005 presented an explanation that, "Spitzer explicitly teaches that the device may be amorphous, single crystal or polycrystalline films and Applicants' conclusion that essentially all devices are single crystal devices is not supported by Spitzer's teachings. Therefore, as shown in Fig. 25, the single crystal; and non-single crystal devices are provided in different areas as claimed." (Final Office Action at page 10).

The Examiner's later statement concerning Fig. 25 appears to be derived from the former statement concerning the various films.

It appears that the Examiner is making several assumptions regarding the teachings of Spitzer in order to maintain the position that Spitzer anticipates the claimed invention.
Spitzer describes Fig. 25A, at page 52, as,

"The starting structure is a silicon wafer 718 upon which an oxide layer 716 and a thin film of poly-Si, a-Si or x-Si 714 is formed using any of the previously described processes such as ISE or CLEFT." [Emphasis added]

Legal Requirements for Inherency

To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the alleged inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Once a reference teaching a product appearing to be substantially identical is made the basis of a rejection, and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to the applicant to show an unobvious difference. "The PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on 'prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same." In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

Assumption 1: Spitzer's statement regarding Fig. 25A teaches or suggests a final device formed using ISE or CLEFT would have any of amorphous, single crystal or polycrystalline films.

Applicants submit that this assumption is not consistent with the rest of the information provided in Spitzer.

First of all, Spitzer's statement pertains to the "starting structure" in a manufacturing process. Fig. 25A does not pertain to the final manufacturing step.

Second, Spitzer's statement indicates that processes such as ISE or CLEFT are performed.

The ISE and CLEFT processes are described, for example, on page 22, as

"The CLEFT process is used to form sheets of essentially single crystal material using lateral epitaxial growth to form a continuous film on top of a release layer. For silicon the lateral epitaxy is accomplished by the ISE process or other recrystallization procedures. Alternatively, other standard deposition techniques can be used to form the necessary thin-film essentially single crystal material." [Emphasis added]

In addition, the ISE process is introduced in Spitzer at page 5 as,
"A particular preferred embodiment uses Isolated Silicon Epitaxy (ISE) to produce a thin film of high quality Si on a release layer. This process can include the deposition of a non-single crystal material such as amorphous or polycrystalline silicon on the release layer which is than [sic] heated to crystallize the material to form an essentially single crystal silicon."

In other words, the final product, single crystal silicon, has been "materially changed" (e.g., recrystallized) from the starting material, thin film of poly-Si, a-Si or x-Si (i.e., a deposition of non-single crystal material such as amorphous or polycrystalline silicon). Eli Lilly & Co. v. American Cyanamid Co., 82 F.3d 1568 (Fed Cir 1996), 38 USPQ2d 1705 (CAFC 1996).

Third, at the beginning of the paragraph at page 52, it is stated, "Figs. 25A-25C illustrate another preferred process for transferring and adhering circuits of thin films of silicon to a glass substrate." On the previous page 51, it is stated, "In another preferred embodiment, a growth and transfer process is employed to provide a thin-film of single crystal silicon positioned on glass as shown in Figures 24A-24D." Before that, on page 49 it is stated, "Another feature of the present invention is that a projection display device employing single crystal silicon light valve matrices provides images with high brightness." Still further, on page 46 it is stated that "One feature of the present invention is that projection devices employing single crystal light valve matrices provide high resolution images." The Abstract of Spitzer states, "A display panel is formed using a single crystal thin-film transistors that are transferred to substrates for display fabrication." Again, the title is "Single Crystal Silicon Arrayed Devices for Projection Displays."

Therefore, Applicants submit that it is very clear that Spitzer pertains to single crystal devices. Furthermore, Applicants submit that even if it could be said that Spitzer discloses non-

single crystal silicon devices, which Applicants do not find any evidence as such, there is no teaching or suggestion of a combination of both a single crystal thin-film device and a non-single crystal thin-film device provided in different areas of an insulating substrate.

Wafers A, B, C are not disclosed as being formed on a single insulating substrate

Assumption 2: The Examiner appears to assume that Fig. 25 shows wafers A, B, and C on the same glass substrate 712.

First, Page 52 of Spitzer describes Fig. 25A as showing "three such wafers A, B, C." Spitzer goes on to state, "In wafer A, logic circuits 740 are formed. In wafer B, pixel electrodes 762 and TFT's 751 are formed. In wafer C, drive circuits 720 are formed." Fig. 25, itself, appears to show standard drawing features such as a broken line to indicate a continuation of the same wafer, and solid lines to indicate ends of the wafer. It can be seen in the drawing that wafers A, B, and C are separate wafers, not one single wafer.

Second, the Spitzer's statement indicates the types of thin films in the alternative, "or." Spitzer does not disclose a manufacturing process in which alternative types of thin films could be formed in combination on the same wafer.

Third, on page 53 of Spitzer, it is stated that, "The thin films 714 transferred to the respective glass substrates 712 are now rinsed and dried." In other words, the sentence indicates that each thin film is transferred to its "respective" glass substrate. The sentence is consistent with the drawings, which show straight sides indicating ends of each wafer/glass substrate, while jagged edges are used to illustrate a continuous connection.

Therefore, Applicants submit that the rejections are clearly erroneous because Spitzer fails to teach or suggest at least the claimed feature of "the non-single-crystal silicon thin-film device and the single-crystal silicon thin-film device are provided in different areas of one insulating substrate."

Applicants request that the rejections be reconsidered and withdrawn.

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